

REMARKS

Claims 4-8 and 12 were previously cancelled. New Claims 16 and 17 have been added. Accordingly, Claims 1-3, 9-11 and 13-17 are pending.

An unexecuted Declaration under 37 C.F.R. § 1.132 by Dr. Pieter L. Buwalda accompanies this Amendment. An executed copy will follow shortly.

Rejection under 35 U.S.C. § 103

The Examiner has rejected Claims 1-3, 9-11 and 13-15 as being obvious over U.S. Patent No. 4,409,250 (van Hulle et al.) in view of U.S. Patent No. 6,488,980 (Jeffcoat et al.).

The Examiner states that van Hulle et al. disclose methods for preparing puffed snack products "from gelatinized doughs whose total amylopectin starch content ranges between about 30-95%." The Examiner states that "the method comprises the steps of mixing amylopectin starch together with other ingredients to form a dough, cooking the dough in an extruder to gelatinize the dough, shaping the dough into pieces, drying the pieces and puffing the pieces." (See Office Action page 2, 3rd paragraph.) The Examiner concedes that "[v]an Hulle et al. do not disclose the amylopectin starch is non-cereal amylopectin starch..." (See Office Action page 2, 4th paragraph.) In an attempt to remedy this deficiency in van Hulle et al., the Examiner states that Jeffcoat et al. disclose cross-linked waxy potato starch.

Thus, the Examiner seems to consider the cooking of the dough in an extruder to achieve gelatinization disclosed by van Hulle et al. to be equivalent to the step of heating to above the glass transition temperature as required by the present invention. Applicants respectfully disagree with the Examiner's analysis, as discussed below.

As pointed out by the Examiner, in the procedure described by van Hulle et al., dough containing pregelatinized starch is **cooked in an extruder under pressure**. For example, cooking takes place at a pressure of 100 to 200 p.s.i.g. (See column 7, lines 21-24, of van Hulle et al.) As asserted previously in the August 16, 2004 Amendment, since the dough is in an extruder, the methods of van Hulle et al. do not allow for expansion of the dough while heating. (See paragraph 3 of the 1.132 Declaration filed along with the August 16, 2004 Amendment.)

In response to Applicants' previous assertions, the Examiner states that "[t]he declaration does not have any comparative showing or testing to demonstrate that the method disclosed by van Hulle does not result in expansion of the food composition." (See Office Action, page 3, 1st full paragraph.) Applicants do not understand why such a showing is necessary. It is apparent that a starch "cooked in an extruder under pressure" would *not* expand.

In contrast, the present invention provides a method of obtaining a heated-expanded dough. The method comprises heating a foodstuff which comprises a non-cereal amylopectin starch to a temperature above the glass transition temperature of the starch. The heating step of the present invention does not take place in an extruder thereby allowing the dough to expand. After expansion, the foodstuff is cooled to below the glass transition temperature.

Therefore, clearly the heating step of van Hulle et al. and the heating step of the present invention are not equivalent. That is, cooking in an extruder under pressure cannot result in, or for that matter be accompanied by, expansion. Thus, the process of gelatinization disclosed in van Hulle et al. is not equivalent to, nor suggestive of, heating starch to above the glass transition temperature.

Additionally, Jeffcoat et al. teach away from using amylopectin potato starch in the methods of the present invention.

The objective of the present invention is the expansion of a dough product. Jeffcoat et al. show that amylopectin potato starch derivatives are much higher in viscosity than waxy maize derivatives (see col. 2, lines 30-35 and 43-48, as well as Fig. 1 and Tables II and III of Jeffcoat et al.). As previously pointed out in the August 16, 2004 Amendment, Dr. Buwalda states that "It is generally understood to those skilled in the art that expansion is inversely related to viscosity (the higher the viscosity, the lower the expansion)." (See paragraph 4 of the 1.132 Declaration filed along with the August 16, 2004 Amendment.)

In response to Applicants' previous assertions, the Examiner states that "[t]his statement is not supported by factual evidence." (See Office Action, page 4, 1st paragraph.) Accordingly, the accompanying 1.132 Declaration provides factual evidence that expansion is inversely related to viscosity. See paragraphs 3 and 4 of the 1.132 Declaration. In particular, the well-known equation that relates viscosity to expansion is provided.

Therefore, from the teaching of Jeffcoat et al., it would have been expected that use of an amylopectin potato starch in the procedure of van Hulle et al. would lead to reduced expansion when compared to the use of waxy maize starch or regular potato starch. Accordingly, Jeffcoat et al. teach away from using amylopectin potato starch when a dough composition with greater expansion is desired.

To recap, the methods of van Hulle et al. are different from the methods of the present invention. Thus, even if amylopectin potato starch were to be used in the methods of van Hulle et al., the results of the present invention would not be achieved. Moreover, Jeffcoat et al. teach away from using amylopectin starch in methods in which the expansion of dough is desired. Accordingly, Applicants request that the obvious rejection of Claims 1-3 and 13-15 be withdrawn.

Additionally, independent Claim 9 of the present invention recites a heated-expanded

foodstuff comprising a non-cereal amylopectin starch. As discussed above, neither van Hulle et al. nor Jeffcoat et al. disclose the preparation of compositions as described in the present application. Thus the cited prior art references cannot disclose the heat-expanded non-cereal amylopectin starch foodstuff products of the present invention. Accordingly, Applicants request that the obvious rejection of Claims 9-11 be withdrawn.

Applicants believe that the rejections are overcome by the above showings. However, Applicants take this opportunity to address some of the other items raised by the Examiner. The Examiner states that "the declaration does not contain any comparative showing of expansion between the product of the claimed method and the van Hulle et al. method." (See Office Action, page 4, 1st paragraph.)

Accordingly, in the accompanying 1.132 Declaration, a comparison of the expansion properties of amylopectin potato starch, waxy maize starch and crosslinked amylopectin starch are provided. (See paragraphs 5-7 of the Declaration.) The expansion of amylopectin potato starch was shown to be about 46% greater than the expansion of the waxy maize starch.

Additionally, the specification demonstrates the significant improvement in expansion behavior by using non-cereal starch with high amylopectin content. For example, see page 10, line 20, to page 11, line 6, of the present specification. In Table 1, a comparison of two foodstuffs, Foodstuff 3 and Foodstuff 4, is presented. Foodstuff 4 consists of amylopectin potato starch. Foodstuff 3 includes amylopectin potato starch along with waxy maize starch. The substitution of the potato starch for the maize starch (a cereal starch) substantially increased the expansion of the final product. In particular, expansion was increased from a 6 to an 8 (i.e., over a 33% increase in expansion). Also, the volume of the foodstuff was increased from 520 ml to 650 ml (i.e., a 25% increase in volume). These results are discussed in paragraph 9 of the accompanying 1.132 Declaration.

The Examiner also states that “the unexpected result is not found persuasive because there is no limitation on the degree of expansion.” (See Office Action, page 4, 1st paragraph.)

The specification contains results of detailed expansion measurements in Table 2. These measurements were performed by weighing the amount necessary to fill a 2 liter measuring cylinder with baked snacks prepared as described in Examples 5-11. The results are expressed as the volume occupied by 200 grams of snacks. As can be seen in Table 2, 200 grams of the snacks prepared in Examples 5 and 8-9, prepared using amylopectin potato starch, all occupy 2100 milliliters or more; whereas 200 grams of the snacks prepared in Examples 6 and 7, prepared using waxy maize starch and regular, amylose containing potato starch, respectively, occupy only 1880 and 1610 milliliters, respectively. In the worst case (i.e., comparing the results for waxy maize of Example 6 with those for amylopectin potato starch in Example 9), this still is an **increase in expansion of more than 15%** (i.e., 2410 ml versus 2100 ml).

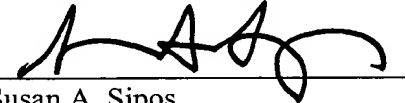
New independent Claims 16 and 17 have been added. These claims recite a degree of expansion as suggested by the Examiner. In particular, these claims recite a foodstuff comprising a composition, wherein said composition consists essentially of a non-cereal amylopectin starch having an amylopectin content of at least 90 weight percent “wherein said heat-expanded foodstuff is at least 15% more expanded than a foodstuff comprising a composition consisting essentially of native potato starch obtained by the same method.”

Support for these new claims can be found throughout the specification. The phrase “wherein said heat-expanded foodstuff is at least 15% more expanded than a foodstuff comprising a composition consisting essentially of native potato starch obtained by the same method” is implicitly supported by Table 2, as discussed above.

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Page 9 of 9

Applicants respectfully submit that the application, including Claims 1-3, 9-11 and 13-17, are now in proper form for allowance, which action is earnestly solicited. If resolution of any remaining issue is required prior to allowance of this application, it is respectfully requested that the Examiner contact Applicants' undersigned attorney at the telephone number provided below.

Respectfully submitted,



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